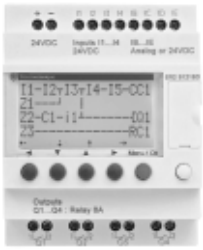
Zelio Logic smart relays
Compact and modular smart relays

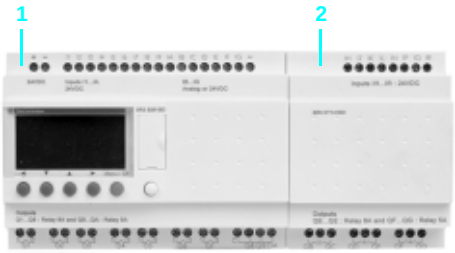
109446



SR2 B121BD

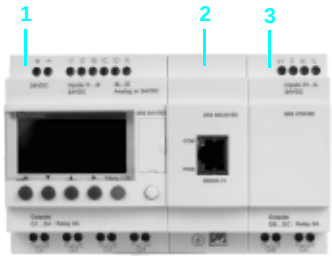
Modular smart relay and extension module combination

109458



1 Modular smart relay (10 or 26 I/O)
2 Discrete I/O (6, 10 or 14 I/O) or analogue I/O (4 I/O) extension module

000003-26



1 Modular smart relay (10 or 26 I/O)
2 Network communication module
3 Discrete I/O (6, 10 or 14 I/O) or analogue I/O (4 I/O) extension module

⚠ *The order shown above must be observed when using a Modbus network slave communication module and a discrete or analogue I/O extension module.*
An I/O extension module cannot be fitted before the Modbus network slave communication module.

Presentation

Zelio Logic smart relays are designed for use in small automation systems. They are used in both the industrial and commercial sectors.

■ **For industry:**
□ automation of small finishing, production, assembly or packaging machines.
□ decentralised automation of ancillary equipment of large and medium-sized machines (textile, plastics, materials processing sectors, etc.)
□ automation systems for agricultural machinery (irrigation, pumping, greenhouses, etc.).

■ **For the commercial/building sectors:**
□ automation of barriers, roller shutters, access control,
□ automation of lighting systems,
□ automation of compressors and air conditioning systems.

Their compact size and ease of setting-up make them a competitive alternative to solutions based on cabled logic or specific cards.

■ **Programming**
Simple programming, ensured by the universal nature of the languages, meets all the requirements of automation specialists and also the needs of the electrician.
Programming can be performed:
□ independently, using the buttons on the smart relay (ladder language),
□ on a PC using “Zelio Soft 2” software.
When using a PC, programming can be performed either in LADDER language or in function block diagram (FBD) language, see pages 14102/6 and 14102/7.

Backlighting of the LCD display *(1)* is set by either using the 6 programming buttons on the smart relay or by using “Zelio Soft 2” software (example: flashing in the event of a malfunction).

The autonomous operating time of the clock, assured by a lithium battery, is 10 years.
Data backup (preset values and current values) is provided by an EEPROM Flash memory (10 years).

Compact smart relays

Compact smart relays meet requirements for simple automation systems.
The number of inputs/outputs can be:
■ 12 or 20 I/O, supplied with ⎓ 12 V or ∿ 24 V,
■ 10, 12 or 20 I/O, supplied with ⎓ 24 V or ∿ 100…240 V.

Modular smart relays and extensions

The number of inputs/outputs for modular smart relays can be:
■ 26 I/O, supplied with ⎓ 12 V,
■ 10 or 26 I/O, supplied with ⎓ 24 V, ∿ 24 V or ∿ 100…240 V.

To improve performance and flexibility, Zelio Logic modular smart relays can be fitted with I/O extension modules with from 10 to 40 I/O:
■ discrete I/O extension modules with 6, 10 or 14 I/O, supplied via the smart relay at the same voltage,
■ analogue I/O extension modules with 4 I/O, supplied with ⎓ 24 V via the smart relay at the same voltage,
■ network communication module, supplied with ⎓ 24 V via the smart relay at the same voltage.

(1) LCD: Liquid Crystal Display.

Functions : pages 14102/5 to 14102/7
Characteristics: pages 14102/8 to 14102/11
Curves : pages 14102/12 and 14102/13
References: pages 14102/14 to 14102/16
Dimensions, schemes: pages 14102/17 to 14102/21

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SR2 MEM02

Memory cartridges

The Zelio Logic smart relay can be fitted with a backup memory cartridge which enables copying of the program into another smart relay for: loading and updating of on-board software (memory cartridge SR2 MEM02 only), building of identical equipment, remote transmission of updates).

These memory cartridges also enable a backup copy of the program to be saved prior to replacing the product.

When they are used with a smart relay without display or buttons, the copy of the program contained in the cartridge is automatically transferred into the smart relay on power-up.

534941

Communication interface

534943

Analogue PSTN modem

534942

GSM modem

Modem communication interface

The “communication” products in the Zelio Logic range include:
- a Modem communication interface connected between a smart relay and a Modem, see pages 14104/2 to 14104/11,
- analogue (PSTN) *(1)* or GSM *(2)* Modems,
- “Zelio Logic Alarm” software.

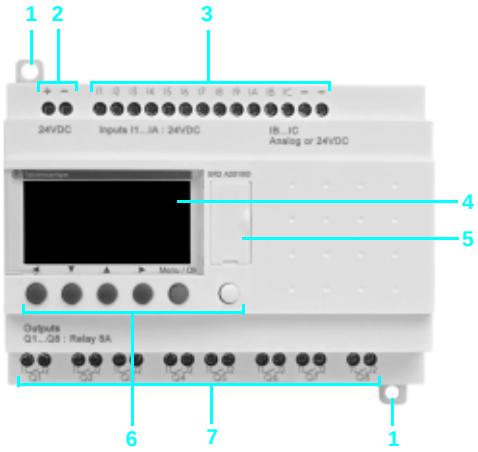
They are designed for monitoring or remote control of machines or installations which operate without personnel.
The Modem communication interface supplied with ⎓ 12...24 V, enables messages, telephone numbers and calling conditions to be stored.

(1) Public Subscriber Telephone Network.
(2) Global System Mobile.

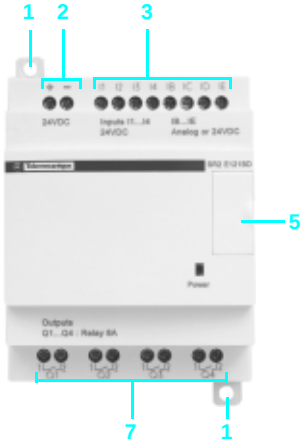
Zelio Logic smart relays
Compact and modular smart relays

Compact smart relays

With display - 10, 12 and 20 I/O



Without display - 10, 12 and 20 I/O

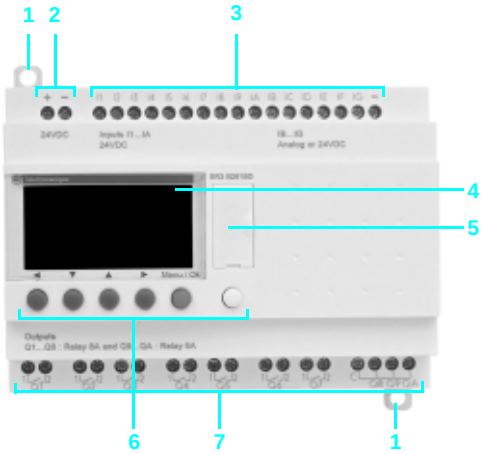


Compact smart relays have the following on the front face:

1 Two retractable fixing lugs.
2 Two power supply terminals.
3 Terminals for connection of the inputs.
4 Backlit LCD display with 4 lines of 18 characters.
5 Slot for memory cartridge or connection to a PC or communication interface.
6 6 buttons for programming and parameter entry.
7 Terminals for connection of the outputs.

Modular smart relays

With display - 10 and 26 I/O

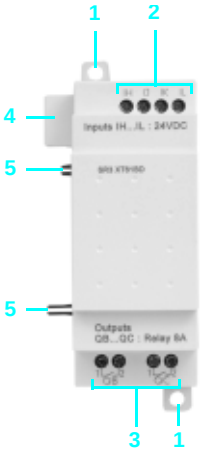


Modular smart relays have the following on the front panel:

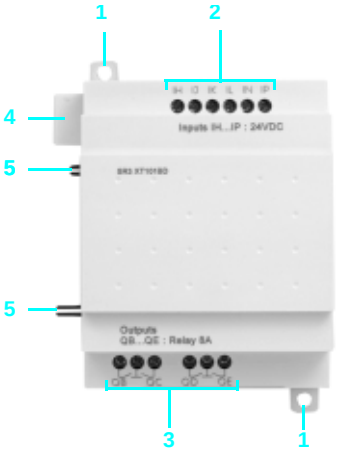
1 Two retractable fixing lugs.
2 Two power supply terminals.
3 Terminals for connection of the inputs.
4 Backlit LCD display with 4 lines of 18 characters.
5 Slot for memory cartridge or connection to a PC or communication interface.
6 6 buttons for programming and parameter entry.
7 Terminals for connection of the outputs.

Discrete and analogue I/O extension modules

6 discrete I/O



10 and 14 discrete I/O



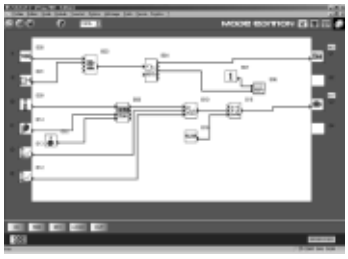
4 analogue I/O

I/O extension modules have the following on the front face:

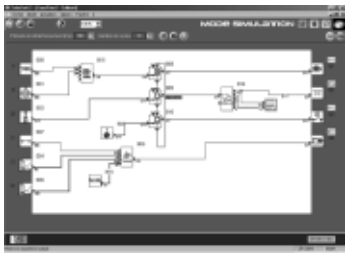
1 Two retractable fixing lugs.
2 Terminals for connection of the inputs.
3 Terminals for connection of the outputs.
4 A connector for connection to the smart relay (powered by the smart relay).
5 Locating pegs.

Zelio Logic smart relays
Compact and modular smart relays
“Zelio Soft 2” programming software

Programming in LADDER language



Programming in FBD language



“Simulation” mode

“Monitoring” window

“Zelio Soft 2” for PC (versions 3.1 and above)

“Zelio Soft 2” software enables:
- programming in LADDER language or in function block diagram (FBD) language, see pages 14102/6 and 14102/7.
- simulation, monitoring and supervision,
- uploading and downloading of programs,
- output of personalised files,
- automatic compiling of programs,
- on-line help.

Coherence tests and application languages

“Zelio Soft 2” software monitors applications by means of its coherence test function. An indicator turns red at the slightest input error. The problem can be located by simply clicking the mouse.
“Zelio Soft 2” software allows switching, at any time, to any of the 6 languages (English, French, German, Spanish, Italian, Portuguese) and editing of the application file in the selected language.

Inputting messages for display on Zelio Logic

“Zelio Soft 2” software allows Text function blocks to be configured, which can then be displayed on all smart relays which have a display.

Program testing

2 test modes are provided:
- “Zelio Soft 2” **simulation** mode allows a program to be tested without a Zelio Logic smart relay, i.e.:
  - enable discrete inputs,
  - display the status of outputs,
  - vary the voltage of the analogue inputs,
  - enable the programming buttons,
  - simulate the application program in real time or in accelerated time,
  - dynamically display (in red) the various active elements of the program.

- “Zelio Soft 2” **monitoring** mode makes it possible to test the program executed by the smart relay, i.e.:
  - display the program “on-line”,
  - force inputs, outputs, control relays and current values of the function blocks,
  - adjust the time,
  - change from STOP mode to RUN mode and vice versa.

In simulation or monitoring mode, the monitoring window allows the status of the smart relay I/Os to be displayed within your application environment (diagram or image).

Zelio Logic smart relays
Compact and modular smart relays
“Zelio Soft 2” programming software

LADDER language

Definition

Text function block

Timer

Up/down counter

Fast counter

Analogue comparator

Clock

Control relay

Counter comparator

LCD backlighting

Summer/Winter time switching

Output coil

Message

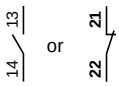
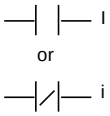
LADDER language enables a LADDER program to be written with elementary functions, elementary function blocks and derived function blocks, as well as with contacts, coils and variables.
The contacts, coils and variables can be annotated. Text can be placed freely within the graphic.

■ **Control scheme input modes**
“Zelio input” mode enables users who have directly programmed the Zelio Logic smart relay to find the same user interface, even when using the software for the first time.
“Free input” mode, which is more intuitive, is very user-friendly and incorporates many additional features.
With LADDER programming language, two alternative types of symbol can be used :
- LADDER symbols,
- electrical symbols.

“Free input” mode also allows the creation of mnemonics and notes associated with each line of the program.
Instant switching from one input mode to the other is possible at any time, by simply clicking the mouse.
Up to 120 control scheme lines can be programmed, with 5 contacts and 1 coil per program line

■ **Functions:**
- 16 time delay function blocks; parameters of 11 different types can be set for each of these (1/10th second to 9999 hours),
- 16 up/down counter function blocks from 0 to 32767,
- 1 fast counter (1 kHz),
- 16 Text function blocks,
- 16 analogue comparator function blocks,
- 8 clock function blocks, each with 4 channels,
- 28 control relays,
- 8 counter comparators,
- automatic Summer/Winter time switching,
- variety of functions: coil, latching (Set/Reset), impulse relay, contactor,
- LCD screen with programmable backlighting,
- 28 message blocks (with communication interface, see page 14104/2).

Functions

Function	Electrical scheme	LADDER language	Notes
Contact			I corresponds to the real state of the contact connected to the input of the smart relay. i corresponds to the inverse state of the contact connected to the input of the smart relay.
Standard coil			The coil is energised when the contacts to which it is connected are closed.
Latch coil (Set)			The coil is energised when the contacts to which it is connected are closed. It remains tripped when the contacts re-open.
Unlatch coil (Reset)			The coil is de-energised when the contacts to which it is connected are closed. It remains inactive when the contacts re-open.

Presentation, description : pages 14102/2 to 14102/4
Characteristics: pages 14102/8 to 14102/11
Curves : pages 14102/12 and 14102/13
References: pages 14102/14 to 14102/16
Dimensions, schemes: pages 14102/17 to 14102/21

Function block diagram language (FBD) *(1)*

Definition

FBD language allows graphical programming based on the use of predefined function blocks.
This language provides the use of 24 pre-programmed functions for counting, time delay, timing, definition of switching threshold (example: temperature regulation), generation of impulses, time programming, multiplexing, display, etc.

Pre-programmed functions

Zelio Logic smart relays provide a high processing capacity, up to 200 function blocks, including 24 pre-programmed functions:

TIMER AC
Timer. Function A/C
(ON-delay and OFF-delay)

TIMER BH
Timer. Function BH.
(adjustable pulsed signal)

TIMER BW
Timer. Function BW
(pulse on rising/falling edge)

TIMER Li
Pulse generator
(ON-delay, OFF-delay)

BISTABLE
Impulse relay function

SET- RESET
Bistable latching - Priority assigned either to SET or RESET function

BOOLEAN
Allows logic equations to be created between connected inputs

CAM
Cam programmer

PRESET COUNT
Up/down counter

UP DOWN COUNT
Up/down counter with external preset

PRESET H-METER
Hour counter
(hour, minute preset)

TIME PROG
Time programmer, weekly and annual.

GAIN
Allows conversion of an analogue value by change of scale and offset.

TRIGGER
Defines an activation zone with hysteresis

MUX
Multiplexing functions on 2 analogue values

COMP IN ZONE
Zone comparison
(Min. ⩽ Value ⩽ Max.)

ADD/SUB
Add and/or subtract function

MUL/DIV
Multiply and/or divide function

DISPLAY
Display of digital and analogue data, date, time, messages for Human-Machine interface.

COMPARE
Comparison of 2 analogue values using the operands =, >, <, ⩽, ⩾.

STATUS
Access to smart relay status

ARCHIVE
Storage of 2 values simultaneously

SPEED COUNT
Fast counting up to 1 kHz

COM
Sending of messages with communication interface (see page 14104/2).

SFC functions *(2)* (GRAFCET)

RESET-INIT
Reinitialisable step

INIT STEP
Initial step

STEP
SFC step

DIV-OR 2
Divergence to OR

CONV-OR 2
Convergence to OR

DIV-AND 2
Divergence to AND

CONV-AND 2
Convergence to AND

Logic functions

AND
AND function

OR
OR function

NAND
NOT AND function

NOR
NOT OR function

XOR
Exclusive OR function

NOT
NOT function

(1) Function Block Diagram.
(2) Sequential Function Chart.

Zelio Logic smart relays
Compact and modular smart relays

General environment characteristics (except for communication Modem interface SR2 COM01, Modems SR2 MOD01 and SR2 MOD02, see page 14104/7)

Product certifications			UL, CSA, GL (pending), C-Tick
Conformity with the low voltage directive	Conforming to 73/23/EEC		EN (IEC) 61131-2 (open equipment)
Conformity with the EMC directive	Conforming to 89/336/EEC		EN (IEC) 61131-2 (Zone B) EN (IEC) 61000-6-2, EN (IEC) 61000-6-3 *(1)* and EN (IEC) 61000-6-4
Degree of protection	Conforming to IEC/EN 60529		IP 20
Overvoltage category	Conforming to IEC/EN 60664-1		3
Degree of pollution	Conforming to IEC/EN 61131-2		2
Ambient air temperature around the device	Operation	**°C**	- 20... + 55 (+ 40 in enclosure), conforming to IEC 60068-2-1 and IEC 60068-2-2
	Storage	**°C**	- 40... + 70
Maximum relative humidity			95% without condensation or dripping water
Maximum operating altitude	Operation	**m**	2000
	Transport	**m**	3048
Mechanical resistance	Immunity to vibration		IEC/EN 60068-2-6, test Fc
	Immunity to mechanical shock		IEC/EN 60068-2-27, test Ea
Resistance to electrostatic discharge	Immunity to electrostatic discharge		IEC/EN 61000-4-2, level 3
Resistance to HF interference (immunity)	Immunity to electromagnetic radiated fields		IEC/EN 61000-4-3, level 3
	Immunity to fast transients in bursts		IEC/EN 61000-4-4, level 3
	Immunity to shock waves		IEC/EN 61000-4-5
	Radio frequency in common mode		IEC/EN 61000-4-6, level 3
	Voltage dips and breaks (⏦)		IEC/EN 61000-4-11
	Immunity to damped oscillation waves		IEC/EN 61000-4-12
Conducted and radiated emissions	Conforming to EN 55022/11 (Group 1)		Class B *(1)*
Screw terminals connection capacity (Tightening using Ø 3.5 screwdriver)	Flexible cable with cable end	**mm²**	1 conductor: 0.25..2.5, cable: AWG 24...AWG 14 2 conductors: 0.25..0.75, cable: AWG 24...AWG 18
	Semi-solid cable	**mm²**	1 conductor: 0.2..2.5 cable: AWG 25...AWG 14
	Solid cable	**mm²**	1 conductor: 0.2..2.5, cable: AWG 25...AWG 14 2 conductors: 0.2..1.5, cable: AWG 24...AWG 16
	Tightening torque	**N.m**	0.5

Processing characteristics

Number of control scheme lines	With LADDER programming		120
Number of function blocks	With FBD programming		Up to 200
Cycle time		**ms**	10...50
Response time		**ms**	20 minimum
Back-up time (in the event of power failure)	Day/time		10 years (lithium battery) at 25 °C
	Program and settings		10 years (EEPROM memory cartridge)
Program memory checking			On each power-up
Clock drift			12 min/year (0 to 55 °C) 6 sec/month (at 25 °C and calibration)
Timer block accuracy			1% ± 2 cycle time

⎓ 12 V supply characteristics

Smart relay type			**SR2 B121JD**	**SR2 B201JD**	**SR3 B261JD**
Primary	Nominal voltage	**V**	12		
Voltage limits	Including ripple	**V**	⎓ 10.4…14.4		
Nominal input current	Without extensions	**mA**	120	200	250
	With extensions	**mA**	–		400
Power dissipated	Without extensions	**W**	1.5	2.5	3
	With extensions	**W**	–		5
Micro-breaks	Permissible duration	**ms**	⩽ 1 (repeated 20 times)		
Protection			Against reverse polarity		

(1) Except for the configuration SR3 B●●●BD + SR3 MBU01BD + SR3 XT43BD class A (class B: work in progress).

⎓ 24 V supply characteristics

Smart relay type				SR2 ●1●1BD	SR2 B122BD	SR2 ●201BD	SR2 B202BD	SR3 B101BD	SR3 B102BD	SR3 B261BD	SR3 B262BD
Primary	Nominal voltage		**V**	24							
Voltage limits	Including ripple		**V**	19.2…30							
Nominal input current	Without extensions		**mA**	100					50	190	70
	With extensions		**mA**	–				100	160	300	180
Power dissipated	Without extensions		**W**	3		6	3		4	6	5
	With extensions		**W**	–				8		10	
Micro-breaks	Permissible duration		**ms**	⩽ 1 (repeated 20 times)							
Protection				Against reverse polarity							

∿ 24 V supply characteristics

Smart relay type			SR2 ●121B	SR2 ●201B	SR3 B101B	SR3 B261B
Primary	Nominal voltage	**V**	24			
Voltage limits		**V**	20.4…28.8			
Nominal frequency		**Hz**	50-60			
Nominal input current	Without extensions	**mA**	145	233	160	280
	With extensions	**mA**	–		280	415
Power dissipated	Without extensions	**VA**	4	6	4	7.5
	With extensions	**VA**	–		7.5	10
Micro-breaks	Permissible duration	**ms**	⩽ 10 (repeated 20 times)			
rms insulation voltage		**V**	1780 (50-60 Hz)			

∿ 100...240 V supply characteristics

Smart relay type			SR2 ●101FU	SR2 ●121FU	SR2 ●201FU	SR3 B101FU	SR3 B261FU
Primary	Nominal voltage	**V**	100…240				
Voltage limits		**V**	85…264				
Nominal input current	Without extensions	**mA**	80/30		100/50	80/30	100/50
	With extensions	**mA**	–			80/40	80/60
Power dissipated	Without extensions	**VA**	7		11	7	12
	With extensions	**VA**	–			12	17
Micro-breaks	Permissible duration	**ms**	10				
rms insulation voltage		**V**	1780				

Discrete ⎓ input characteristics (inputs I1...IA and IH...IR)

Smart relay type				SR● ●●●●JD	SR● ●●●●BD
Nominal value of inputs	Voltage		**V**	12	24
	Current		**mA**	4	
Input switching limit values	At state 1	Voltage	**V**	⩾ 5.6	⩾ 15
		Current	**mA**	⩾ 2	⩾ 2.20
	At state 0	Voltage	**V**	⩽ 2.4	⩽ 5
		Current	**mA**	< 0.9	< 0.75
Input impedance at state 1			**kΩ**	2.7	7.4
Conforming to IEC/EN 61131-2				Type 1	
Sensor compatibility	3-wire			Yes PNP	
	2-wire			No	
Input type				Resistive	
Isolation	Between supply and inputs			None	
	Between inputs			None	
Maximum counting frequency			**kHz**	1	
Protection	Against inversion of terminals			Control instructions not executed	

Discrete or analogue ⎓ input characteristics (inputs IB...IG)

⎓ discrete inputs

Smart relay type				SR● ●●●●JD	SR● ●●●●BD
Nominal value of inputs	Voltage		**V**	12	24
	Current		**mA**	4	
Input switching limit values	At state 1	Voltage	**V**	⩾ 7	⩾ 15
		Current	**mA**	⩾ 0.5	⩾ 1.2
	At state 0	Voltage	**V**	⩽ 3	⩽ 5
		Current	**mA**	⩽ 0.2	⩽ 0.5
Input impedance at state 1			**kΩ**	14	12
Conforming to IEC/EN 61131-2				Type 1	
Sensor compatibility	3-wire			Yes PNP	
	2-wire			No	
Input type				Resistive	
Isolation	Between supply and inputs			None	
	Between inputs			None	
Maximum counting frequency			**kHz**	1	
Protection	Against inversion of terminals			Control instructions not executed	

⎓ analogue inputs

Smart relay type			SR● ●●●●JD	SR● ●●●●BD
Input range		**V**	0...10 or 0...12	0...10 or 0...24
Input impedance		**kΩ**	14	12
Maximum non destructive voltage		**V**	14.4	30
Value of LSB			39 mV, 4 mA	
Input type			Common mode	
Conversion	Resolution		8 bits	
	Conversion time		Smart relay cycle time	
	Precision	at 25 °C	± 5 %	
		at 55 °C	± 6.2 %	
	Repeat accuracy	at 55 °C	± 2 %	
Isolation	Between analogue channel and supply		None	
Cabling distance		**m**	10 maximum, with screened cable (sensor not isolated)	
Protection	Against inversion of terminals		Control instructions not executed	

Analogue ⎓ input characteristics (inputs IH, IJ and Pt)

Analogue inputs	Application		0 -10 V	0-20 mA	Pt100
	Assignable inputs		IH and IJ	IH and IJ	IJ
	Input range		0...10 Vdc	0...20 mA	- 25 °C...+ 125 °C
	Input impedance	Ω	18 k	246	–
	Maximum non destructive value		30 V	30 mA	–
	Value of LSB		9.8 mV	20 µA	0.15 °C
	Input type		Common mode		Pt100 probe - IEC 751 3-wire
Conversion	Resolution		10 bits		
	Conversion time		Smart relay cycle time		
	Precision	at 25 °C	± 1 %		± 1.5 °C
		at 55 °C	± 1 %		± 1.5 °C
	Repeat accuracy	at 25 °C	< ± 1 %		< ± 0.3 °C
Isolation	Between analogue chan. & supply		None		
Cabling distance		**m**	10 maximum, with screened cable (sensor not isolated)		
Protection	Against inversion of terminals		Control instructions not executed		–

Discrete ∿ input characteristics

Smart relay type				SR● ●●●●B	SR● ●●●●FU
Nominal value of inputs	Voltage		**V**	24	100... 240
	Current		**mA**	4.4	0.6
	Frequency		**Hz**	47...63	
Input switching limit values	At state 1	Voltage	**V**	⩾ 14	⩾ 79
		Current	**mA**	> 2	> 0.17
	At state 0	Voltage	**V**	⩽ 5	⩽ 40
		Current	**mA**	< 0.5	
Input impedance at state 1			**kΩ**	4.6	350
Configurable response time	State 0 to 1 (50/60 Hz)		**ms**	50	
	State 1 to 0 (50/60 Hz)		**ms**	50	
Isolation	Between supply and inputs			None	
	Between inputs			None	
Protection	Against inversion of terminals			Control instructions not executed	

Presentation, description : pages 14102/2 to 14102/4
Functions : pages 14102/5 to 14102/7
Curves : pages 14102/12 and 14102/13
References: pages 14102/14 to 14102/16
Dimensions, schemes: pages 14102/17 to 14102/21

Relay output characteristics

Smart relay type				SR2 ●●●/ SR3 B101●●/ SR3 XT61●●/ SR3 XT101●●	SR3 B261●●	SR3 XT141●●
Operating limit values			**V**	⎓ 5...150 ∿ 24...250		
Contact type				N/O		
Thermal current			**A**	8	8 outputs: 8 A 2 outputs: 5 A	4 outputs: 8 A 2 outputs: 5 A
Electrical durability for 500 000 operating cycles	Utilisation category	DC-12	**V**	24		
			A	1.5		
		DC-13	**V**	24 (L/R = 10 ms)		
			A	0.6		
		AC-12	**V**	230		
			A	1.5		
		AC-15	**V**	230		
			A	0.9		
Minimum switching capacity	At minimum voltage of 12 V		**mA**	10		
Low power switching reliability of contact				12 V - 10 mA		
Maximum operating rate	No-load		**Hz**	10		
	At Ie (operational current)		**Hz**	0.1		
Mechanical life	In millions of operating cycles			10		
Rated impulse withstand voltage (Uimp)	Conforming to IEC/EN 60947-1 and IEC/EN 60664-1		**kV**	4		
Response time	Trip		**ms**	10		
	Reset		**ms**	5		
Built-in protection	Against short-circuits			None		
	Against overvoltage and overload			None		

Transistor output characteristics

Smart relay type			SR● B●●2BD
Operating limit values		**V**	19.2...30
Load	Nominal voltage	**V**	⎓ 24
	Nominal current	**A**	0.5
	Maximum current	**A**	0.625 at 30 V
Drop-out voltage	At state 1	**V**	⩽ 2 for I = 0.5 A
Response time	Trip	**ms**	⩽ 1
	Reset	**ms**	⩽ 1
Built-in protection	Against overload and short-circuits		Yes
	Against overvoltage *(1)*		Yes
	Against inversions of power supply		Yes

(1) If there is no volt-free contact between the smart relay output and the load.

Analogue output characteristics (QB, QC)

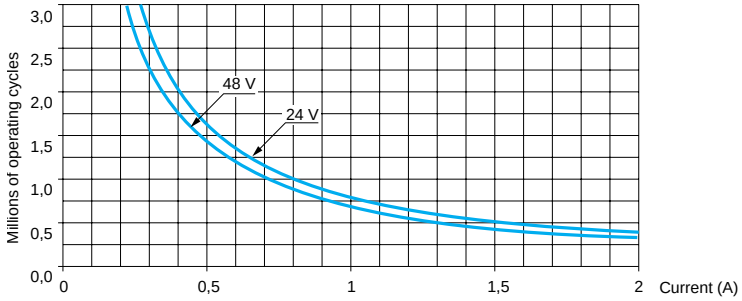
Analogue outputs	Output range		**V**	∿ 0...10
	Type of load			Resistive
	Maximum load		**mA**	10
	Value of LSB		**mV**	10
Conversion	Resolution			10 bits
	Conversion time			Smart relay cycle time
	Precision	at 25 °C		± 1% of the full scale value
		at 55 °C		± 1% of the full scale value
	Repeat accuracy	at 55 °C		< ± 1%
Isolation	Between analogue channel and supply			None
Cabling distance			**m**	10 maximum, with screened cable
Built-in protection	Against inversion of terminals			Yes

Zelio Logic smart relays
Compact and modular smart relays

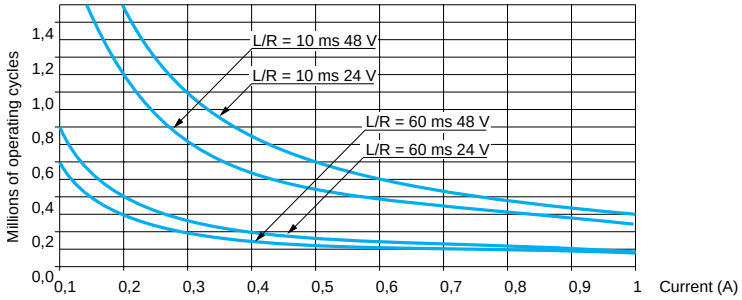
Electrical durability of relay outputs
(in millions of operating cycles, conforming to IEC 60947-5-1)

d.c. loads

DC-12 *(1)*



DC-13 *(2)*



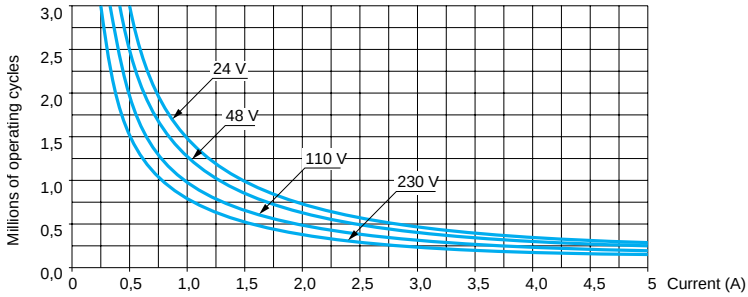
(1) DC-12: switching resistive loads and photo-coupler isolated solid-state loads, L/R ⩽ 1 ms.
(2) DC-13: switching electromagnets, L/R ⩽ 2 x (Ue x Ie) in ms, Ue: rated operational voltage, Ie: rated operational current (with a protection diode on the load, DC-12 curves must be used with a coefficient of 0.9 applied to the number in millions of operating cycles).

Electrical durability of relay outputs (continued)

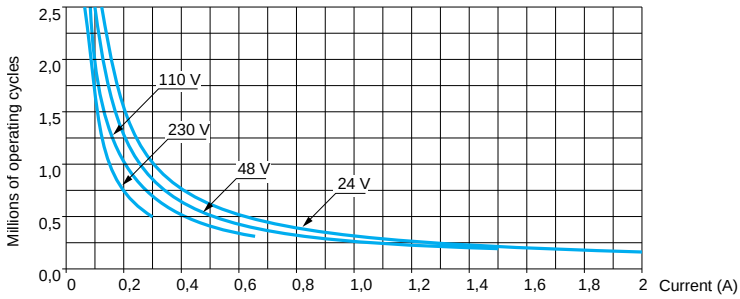
(in millions of operating cycles, conforming to IEC 60947-5-1)

a.c. loads

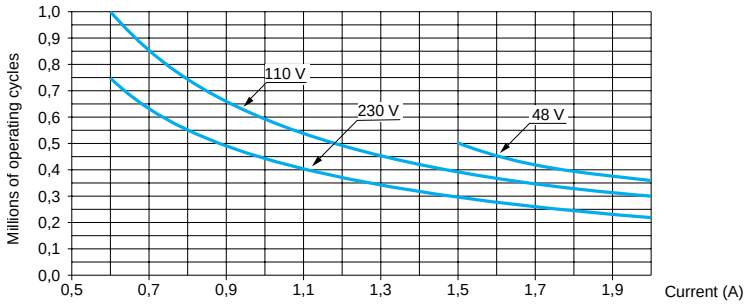
AC-12 *(1)*



AC-14 *(2)*



AC-15 *(3)*



(1) AC-12: switching resistive loads and photo-coupler isolated solid-state loads, cos ≥ 0.9.
(2) AC-14: switching small electromagnetic loads ≤ 72 VA, make: cos = 0.3, break: cos = 0.3.
(3) AC-15: switching electromagnetic loads > 72 VA, make: cos = 0.7, break: cos = 0.4.

Zelio Logic smart relays
Compact smart relays

109440

SR2 A201BD

Compact smart relays with display

Number of I/O	Discrete inputs	Including 0-10 V analogue inputs	Relay outputs	Transistor outputs	Clock	Reference	Weight kg
Supply ⎓ 12 V							
12	8	4	4	0	Yes	**SR2 B121JD**	0.250
20	12	6	8	0	Yes	**SR2 B201JD**	0.380
Supply ⎓ 24 V							
10	6	0	4	0	No	**SR2 A101BD** *(1)*	0.250
12	8	4	4	0	Yes	**SR2 B121BD**	0.250
	8	4	0	4	Yes	**SR2 B122BD**	0.220
20	12	2	8	0	No	**SR2 A201BD** *(1)*	0.380
	12	6	8	0	Yes	**SR2 B201BD**	0.380
	12	6	0	8	Yes	**SR2 B202BD**	0.280
Supply ∿ 24 V							
12	8	0	4	0	Yes	**SR2 B121B**	0.250
20	12	0	8	0	Yes	**SR2 B201B**	0.380
Supply ∿ 100...240 V							
10	6	0	4	0	No	**SR2 A101FU** *(1)*	0.250
12	8	0	4	0	Yes	**SR2 B121FU**	0.250
20	12	0	8	0	No	**SR2 A201FU** *(1)*	0.380
	12	0	8	0	Yes	**SR2 B201FU**	0.380

109442

SR2 E121BD

Compact smart relays without display

Number of I/O	Discrete inputs	Including 0-10 V analogue inputs	Relay outputs	Transistor outputs	Clock	Reference	Weight kg
Supply ⎓ 24 V							
10	6	0	4	0	No	**SR2 D101BD** *(1)*	0.220
12	8	4	4	0	Yes	**SR2 E121BD**	0.220
20	12	2	8	0	No	**SR2 D201BD** *(1)*	0.350
	12	6	8	0	Yes	**SR2 E201BD**	0.350
Supply ∿ 24 V							
12	8	0	4	0	Yes	**SR2 E121B**	0.220
20	12	0	8	0	Yes	**SR2 E201B**	0.350
Supply ∿ 100...240 V							
10	6	0	4	0	No	**SR2 D101FU** *(1)*	0.220
12	8	0	4	0	Yes	**SR2 E121FU**	0.220
20	12	0	8	0	No	**SR2 D201FU** *(1)*	0.350
	12	0	8	0	Yes	**SR2 E201FU**	0.350

510345

SR2 PACK●●●

Compact “discovery” packs

Number of I/O	Pack contents	Reference	Weight kg
Supply ⎓ 24 V			
12	An **SR2 B121BD** compact smart relay with display, a connecting cable and “Zelio Soft 2” programming software supplied on CD-ROM.	**SR2 PACKBD**	0.700
20	An **SR2 B201BD** compact smart relay with display, a connecting cable and “Zelio Soft 2” programming software supplied on CD-ROM.	**SR2 PACK2BD**	0.850
Supply ∿ 100...240 V			
12	An **SR2 B121FU** compact smart relay with display, a connecting cable and “Zelio Soft 2” programming software supplied on CD-Rom.	**SR2 PACKFU**	0.700
20	An **SR2 B201FU** compact smart relay with display, a connecting cable and “Zelio Soft 2” programming software supplied on CD-Rom.	**SR2 PACK2FU**	0.850

(1) Programming on smart relay in LADDER language only.

Zelio Logic smart relays
Modular smart relays

109442

SR3 B101BD

109363

SR3 XT61BD

109369

SR3 XT141BD

534945

SR3 XT43BD

Modular smart relays with display

Number of I/O	Discrete inputs	Including 0-10 V analogue inputs	Relay outputs	Transistor outputs	Clock	Reference	Weight kg
Supply ⎓ 12 V							
26	16	6	10	0	Yes	**SR3 B261JD** *(1)*	0.400
Supply ⎓ 24 V							
10	6	4	4	0	Yes	**SR3 B101BD**	0.250
	6	4	0	4	Yes	**SR3 B102BD**	0.220
26	16	6	10 *(2)*	0	Yes	**SR3 B261BD**	0.400
	16	6	0	10	Yes	**SR3 B262BD**	0.300
Supply ∿ 24 V							
10	6	0	4	0	Yes	**SR3 B101B**	0.250
26	16	0	10 *(2)*	0	Yes	**SR3 B261B**	0.400
Supply ∿ 100-240 V							
10	6	0	4	0	Yes	**SR3 B101FU**	0.250
26	16	0	10 *(2)*	0	Yes	**SR3 B261FU**	0.400

Discrete I/O extension modules *(3)*

Number of I/O	Discrete inputs	Relay outputs	Reference	Weight kg
Supply ⎓ 12 V (for smart relay SR3 B261JD)				
6	4	2	**SR3 XT61JD**	0.125
10	6	4	**SR3 XT101JD**	0.200
14	8	6	**SR3 XT141JD**	0.220
Supply ⎓ 24 V (for smart relays SR3 B●●●BD)				
6	4	2	**SR3 XT61BD**	0.125
10	6	4	**SR3 XT101BD**	0.200
14	8	6	**SR3 XT141BD**	0.220
Supply ∿ 24 V (for smart relays SR3 B●●●B)				
6	4	2	**SR3 XT61B**	0.125
10	6	4	**SR3 XT101B**	0.200
14	8	6	**SR3 XT141B**	0.220
Supply ∿ 100-240 V (for smart relays SR3 B●●●FU)				
6	4	2	**SR3 XT61FU**	0.125
10	6	4	**SR3 XT101FU**	0.200
14	8	6	**SR3 XT141FU**	0.220

Analogue I/O extension modules

Supply ⎓ 24 V

Number of I/O	Number of inputs	Including 0 - 10 V	Including 0 - 20 mA	Including Pt100	Output 0 - 10 V	Reference	Weight kg
4	2 *(4)*	2 max	2 max	1 max	2	**SR3 XT43BD** *(1) (5)*	0.110

Network communication module *(3) (6)*

For use on	Supply voltage	Reference	Weight kg
Modbus network (slave)	⎓ 24 V	See page 14105/5	0.300

Modular “discovery” packs

Number of I/O	Pack contents	Reference	Weight kg
Supply ⎓ 24 V			
10	An **SR3 B101BD** modular smart relay, a connecting cable and “Zelio Soft 2” programming software supplied on CD-ROM.	**SR3 PACKBD**	0.700
26	An **SR3 B261BD** modular smart relay, a connecting cable and “Zelio Soft 2” programming software supplied on CD-ROM.	**SR3 PACK2BD**	0.850
Supply ∿ 100...240 V			
10	An **SR3 B101FU** modular smart relay, a connecting cable and “Zelio Soft 2" programming software supplied on CD-Rom.	**SR3 PACKFU**	0.700
26	An **SR3 B261FU** modular smart relay, a connecting cable and “Zelio Soft 2” programming software supplied on CD-Rom.	**SR3 PACK2FU**	0.850

(1) Can only be used with "Zelio Soft 2" software version ⩾ V3.1.
(2) Including 8 outputs at maximum current of 8 A and 2 outputs at maximum current of 5 A.
(3) Power supply to the I/O extension and communication modules is via the modular smart relay.
(4) See page 14102/20.
(5) Can only be used in FBD language.
(6) See pages 14105/2 to 14105/5.

Note : *The smart relay and its associated extensions must have an identical voltage.*

Zelio Logic smart relays
Compact and modular smart relays
Separate components

510352

SR2 SFT01

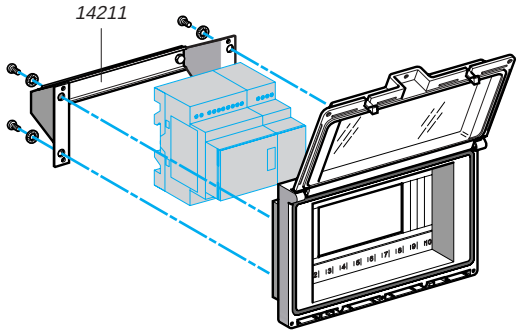
523109

SR2 USB01

534944

SR2 MEM02

DF563990



14210

"Zelio Soft 2" software for PC

Description	Application	Reference	Weight kg
Programming software "Zelio Soft 2", multilingual	For PC, supplied on CD-ROM *(1)*, compatible with Windows 98, NT, 2000, XP and ME.	**SR2 SFT01**	0.200
Connecting cable	Between the PC (SUB-D, 9-pin connector) and the smart relay, length: 3 m	**SR2 CBL01**	0.150
	Between the PC (USB connector) and the smart relay, length: 3 m	**SR2 USB01** ▲	0.100
Interface	For USB port (to be used with cable SR2 CBL01), length: 1.8 m	**SR2 CBL06**	0.350

Memory cartridges *(2)*

Description	Application	Reference	Weight kg
EEPROM memory cartridge	For firmware (software incorporated in the smart relay) version ⩽ 2.4	**SR2 MEM01**	0.010
	For firmware (software incorporated in the smart relay) version ⩾ 3.0	**SR2 MEM02**	0.010

Modem communication interface *(3)*

Description	Supply	Reference	Weight kg
Modem communication interface	⎓ 12...24 V	See page 14104/8	

Converters

Description	Reference	Weight kg
Converters for thermocouples types J and K, for Pt100 probes and voltage/current	See page 14011/6	–

Power supplies

Input voltage	Nominal output voltage	Reference	Weight kg
∿ 100...240 V (47...63 Hz)	⎓ 12 V or ⎓ 24 V	See page 14060/5	–

Mounting accessories *(4)*

Description	Mounting capacity	Application	Reference	Weight kg
Dust and damp-proof enclosure with split blanking plate arrangement, fitted with IP 55 dust and damp-proof window with hinged flap.	- 1 or 2 SR2 modules with 10 or 12 I/O, or - 1 SR2 module with 20 I/O, or - 1 SR3 module with 10 I/O + 1 I/O extension module (6, 10 or 14 I/O), or - 1 SR3 module with 26 I/O + 1 I/O extension module (6 I/O).	For mounting through a door	**14210**	0.350
Fixing bracket and symmetrical mounting rail	–	For mounting enclosure **14210** through a door panel	**14211**	0.210

Documentation

Description	Application	Language	Reference	Weight kg
User's manual	For direct programming on the smart relay	English	**SR2 MAN01EN**	0.100
		French	**SR2 MAN01FR**	0.100
		German	**SR2 MAN01DE**	0.100
		Spanish	**SR2 MAN01ES**	0.100
		Italian	**SR2 MAN01IT**	0.100
		Portuguese	**SR2 MAN01P0**	0.100

(1) CD-ROM comprising "Zelio Soft 2" software, an application library, a self-training manual, installation instructions and a user's manual.
(2) Program loading using memory cartridge SR2 MEM02 is incompatible with Modem communication interface SR2 COM01.
(3) See pages 14104/2 to 14104/11.
(4) Products marketed under the Merlin Gerin brand.

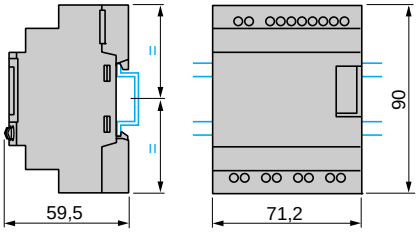
▲ Available 1st quarter 2006

Presentation, description : pages 14102/2 to 14102/4
Functions : pages 14102/5 to 14102/7
Characteristics: pages 14102/8 to 14102/11
Curves : pages 14102/12 and 14102/13
Dimensions, schemes: pages 14102/17 to 14102/21

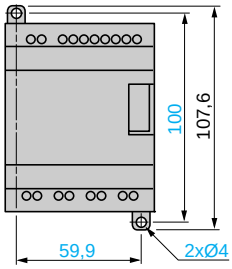
Compact and modular smart relays

SR● ●10●●● (10 I/O), SR2 ●12●●● (12 I/O)

Mounting on 35 mm ⊓ rail

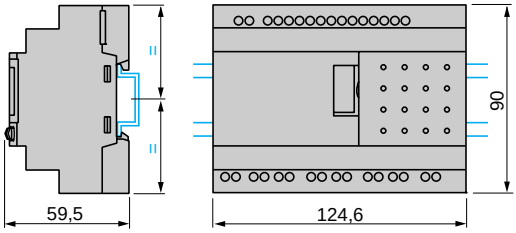


Screw fixing (retractable lugs)

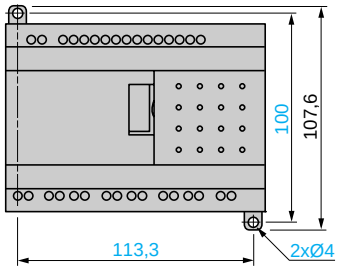


SR2 ●20●●● (20 I/O), SR3 B26●●● (26 I/O)

Mounting on 35 mm ⊓ rail



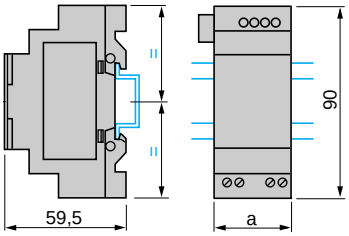
Screw fixing (retractable lugs)



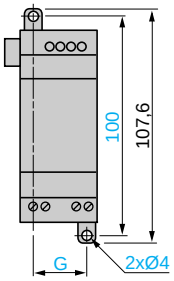
I/O extension modules

SR3 XT43BD (4 I/O), SR3 XT61●● (6 I/O), SR3 XT101●● and SR3 XT141●● (10 and 14 I/O)

Mounting on 35 mm ⊓ rail



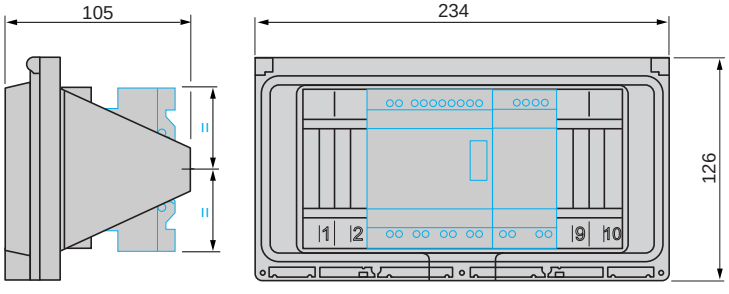
Screw fixing (retractable lugs)



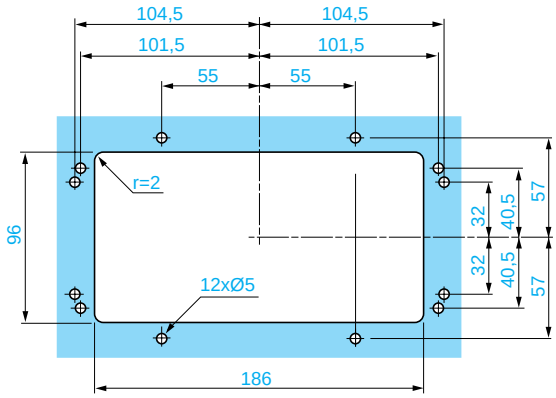
SR3	a	G
XT43BD	35.5	25
XT61●●	35.5	25
XT101●●	72	60
XT141●●	72	60

Enclosure + fixing bracket

14210 + 14211



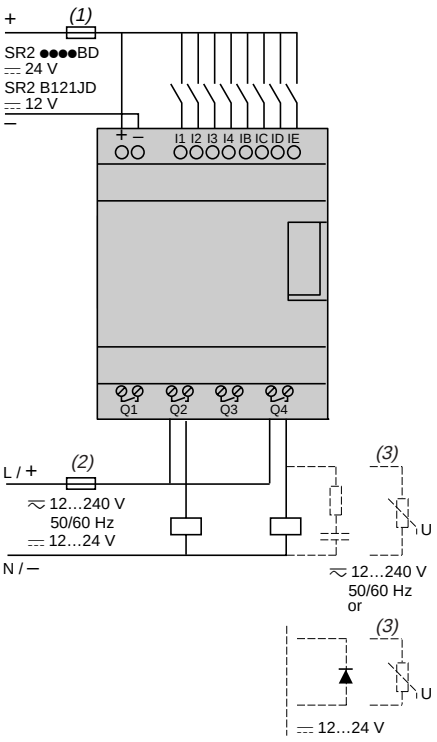
Cut-out



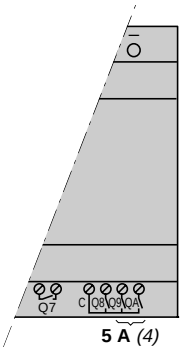
Zelio Logic smart relays
Compact and modular smart relays

Connection of smart relays on ⎓ supply

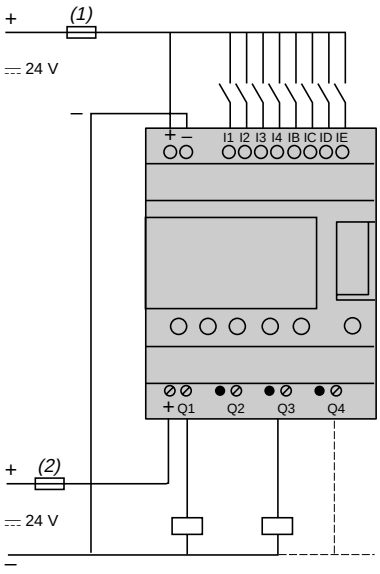
SR● ●●●1BD, SR● ●●●1JD



SR3 B261●D

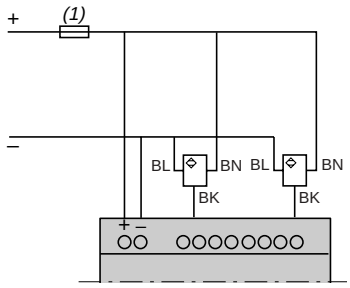


SR2 B●●2BD and SR3 B●●2BD



(1) 1 A quick-blow fuse or circuit-breaker.
(2) Fuse or circuit-breaker.
(3) Inductive load.
(4) Q9 and QA: 5 A.

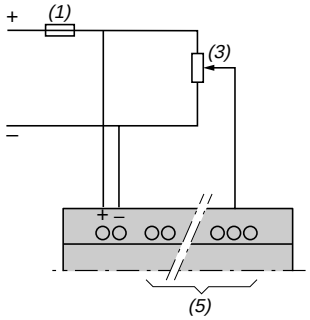
Discrete input used for 3-wire sensors

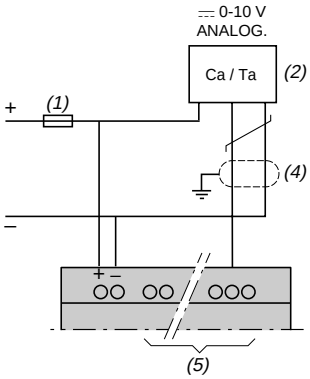


(1) 1 A quick-blow fuse or circuit-breaker.

Connection of smart relays on ⎓ supply (continued)

Analogue inputs



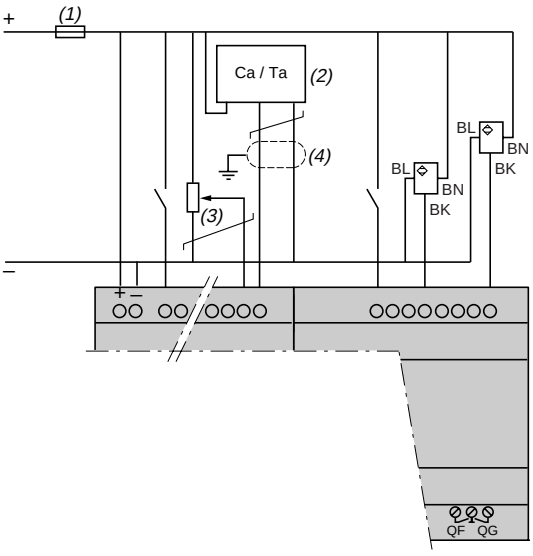


(1) 1 A quick-blow fuse or circuit-breaker.
(2) Ca: Analogue sensor / Ta: Analogue transmitter.
(3) Recommended values: 2.2 kΩ / 0.5 W (10 kΩ max.).
(4) Screened cables, maximum length 10 m.
(5) Analogue inputs according to smart relay, see table below:

Smart relays	Analogue inputs
SR2 ●12●●D	IB…IE
SR2 A201BD	IB and IC
SR2 D201BD	IB and IC
SR2 B20●●D	IB…IG
SR2 E201BD	IB…IG
SR3 B10●BD	IB…IE
SR3 B26●●D	IB…IG

Connection of smart relays on ⎓ supply, with discrete I/O extension modules

SR3 B●●●JD + SR3 XT●●●JD, SR3 B●●●BD + SR3 XT●●●BD



Warning: QF and QG: 5 A for **SR3 XT141●●**

(1) 1 A quick-blow fuse or circuit-breaker.
(2) Ca: Analogue sensor / Ta: Analogue transmitter.
(3) Recommended values: 2.2 kΩ / 0.5 W (10 kΩ max.).
(4) Screened cables, maximum length 10 m.

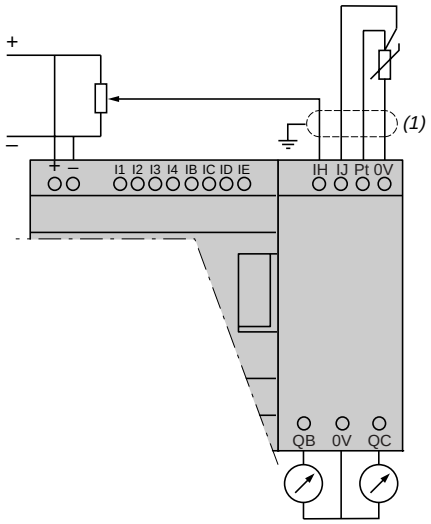
Connection of smart relays on ⎓ supply, with analogue I/O extension module

SR3 B●●●BD + SR3 XT43BD

Connection alternatives

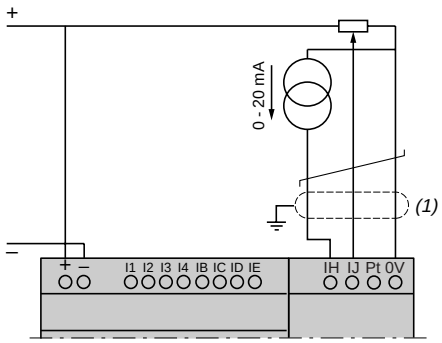
0 - 10 V	0 - 20 mA	Pt100
2	0	0
1	1	0
0	2	0
1	0	1
0	1	1

Application example with 1 x 0 - 10 V input and 1 x Pt100 input



(1) Screened cables, maximum length 10 m.

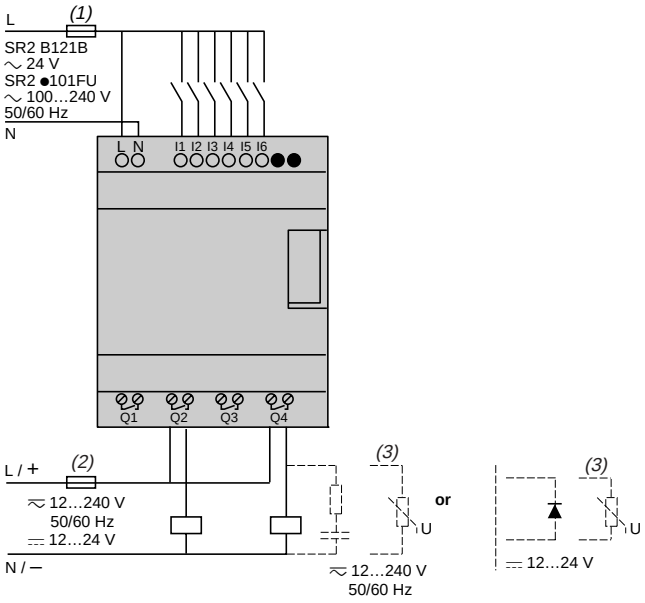
Application example with 1 x 0 - 20 mA input and 1 x 0 - 10 V input



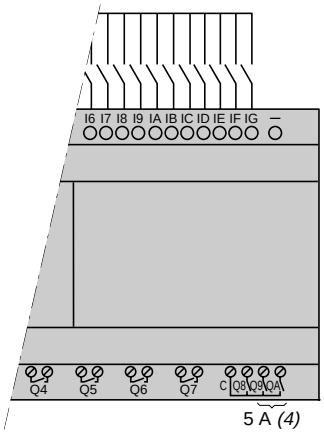
(1) Screened cables, maximum length 10 m.

Connection of smart relays on ∿ supply

SR● ●●●1B, SR● ●●●1FU



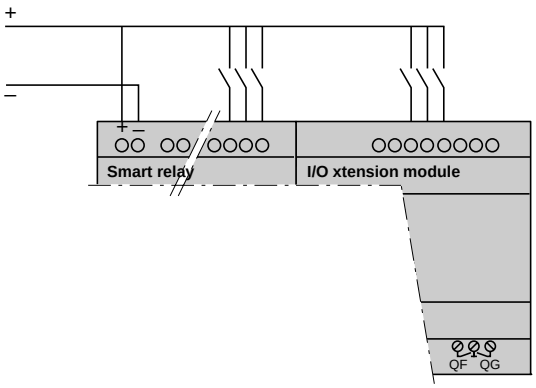
SR3 B261B and SR3 B261FU



(1) 1 A quick-blow fuse or circuit-breaker.
(2) Fuse or circuit-breaker.
(3) Inductive load.
(4) Q9 and QA: 5 A.

With discrete I/O extension module

SR3 B●●●B + SR3 XT●●●B, SR3 B●●●FU + SR3 XT●●●FU



Warning: QF and QG: 5 A for **SR3 XT141●●**